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CHRIS DALL: Hello, and welcome to the Osterholm Update: COVID-19, a weekly podcast on the COVID-19 pandemic, with Dr. Micheal Osterholm. Dr. Osterholm is an internationally recognized medical detective and director of the Center for Infectious Disease Research and Policy, or CIDRAP at the University of Minnesota. In this podcast, Dr. Osterholm will draw on more than 45 years of experience investigating infectious disease outbreaks to provide straight talk on the COVID-19 pandemic. I'm Chris Dall, reporter for CIDRAP news, and I'm your host for these conversations. As we come to the end of June, a summer that some had hoped would coincide with the reopening of the country and maybe bring bit of a rest from the COVID-19 pandemic, is instead being marked by a surge in coronavirus infections and hospitalizations around the country, and, in some states, a pause in reopening. In many parts of the country, this will be a quieter than usual Fourth of July.
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So we're going to spend this episode of the Osterholm Update talking about the rapid spread of the coronavirus in the U.S., where the nation is headed as it grapples with the pandemic, what the game plan should be going forward, and how we can find ways to live with the virus, but before we get to all of that, Mike, who are you dedicating this episode of the podcast to?
DR. OSTERHOLM:
Thanks Chris. It's great to be with you here today, and with the audience. Thank you for coming back to those listening to the podcast, having listened to it before, and welcome to those who are listening to it for the first time. After thinking about this, my surprise dedication, since I often share it with the CIDRAP staff beforehand, is in fact the CIDRAP staff. I work at an incredible place with 27 people, who are among the most dedicated, caring, and brilliant people that I could ever imagine. The leadership at the Center has now been together for a better part, each of us together,
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for more than 35 years, and the people we have working on a day-to-day basis in so many aspects of infectious disease work, and specifically having dedicated themselves in the most amazing way since January, some who have not literally had a day off since January, working on this issue. So I dedicate this to you, CIDRAP staff. In particular to Chris Dall, Maya Peters, Angie Ulrich, and to Cory Anderson, all who help me on a weekly basis put this together. It does take a village to help an old man, and I appreciate that more than you know. So thank you to CIDRAP, and also I want to say something about being at the University of Minnesota. It's also a real privilege to be at an institution that supports CIDRAP as the University does, but also a University that is dealing with very tough financial situations right now, and under the leadership of President Joan Gabel, our new president who walked into, basically this crisis, in her first year as president,
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made a conscious decision to protect certain University employees from any kind of furlough or pay reduction that would be necessary to help us just get through this very tough financial time, and President Gabel made it her priority that employees with a base pay of less than $60,000, many essential workers, new employees with recent hire dates, professionals in training including pre-doctoral, post-doctoral associates and residents, graduate assistants,

undergraduate student workers, those with H1B and E3 Visa holders, academic temp. casuals, and temporary employees across the University, employees in phase retirement, employees in military leave while in active duty, all of these, and finally, including employees on Disability leave as of June 21, were all held exempt from these furlough and pay reductions.
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That makes me very proud to be at a university where we care about our entire community, and while some of us are taking furloughs and pay cuts that we surely don't want, but we understand the need, but when you work at an institution like I do, where people care about people, even though we're big, even though we're one of those places that you wouldn't think anybody would do this kind of thing, we have, and my hats off to President Gabel, and my heart is out to the CIDRAP staff for what you do. So, with that, Chris, this one is dedicated to you. Thank you.
CHRIS DALL: Well, Mike, on behalf of all the CIDRAP staff I say thanks to you. So, Mike, you've said all along, that we need to find a way to live with this virus, but with cases rising in more than 30 states, and more than 40,000 infections per day being reported right now, it seems that much of the country is finding that to be a challenge. Is part of the problem that we have 50 states pursuing 50 different strategies for controlling this pandemic?
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DR. OSTERHOLM: When we look at where we're at today, we still have to realize we're in the earliest days of this pandemic, and, you know, I've been saying that for some time, I think to the point where people have felt almost, "move on, move on!" But I couldn't move on, because I understood the proportion of citizens around the world who were infected by this virus and what was yet to come, and of course, in the United States, at the very heart of this is what's happening here. To date, we've had 2.7 million cases reported, 130,000 deaths reported. I never forget that those are loved ones from someone's family, colleagues, acquaintances, and they're more than numbers, and they don't even really represent the true burden of what's happened with COVID-19 disease and SARS-CoV-2 infection in terms of the total number that we've missed, because they weren't tested and not realized to have been cases.
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When I think about this, just for perspective standpoint, realize we're at an inflection point in this pandemic. Now is the time for us to understand what we're really up against. I don't think we have to date. I know our colleagues, in some of the cities, particular New York, the metropolitan area of Connecticut and New Jersey, cities like Detroit, New Orleans, Atlanta, cities that really did understand that at their specific hospitals, the impact that this disease could have, but to give you just some relative sense, 3 weeks ago today, when I was working on this podcast, there were 17 states that were seeing an increase in cases, and there were 23 seeing decreasing cases, and at that point, I think, people were saying, "Yup, this is it. All we have to do is continue to just basically do what we've been doing, gradually, in some cases even more quickly, basically open up. Let it back again, we've stopped this,"
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and anyone who is listened to this podcast over the course of the past few months knows that was not the case. You knew that we understood that this virus was going to get us one way or the other. We are going to go from that 5-7% of the population infected, to the 50-70% that would be necessary to develop herd immunity. Of course, we heard that last week when CDC

announced the results of some of their serologic studies, and that was amazing to me how many people in the media were just shocked to find out that 5-7% of the U.S. population had really been infected, not just the case numbers, when in fact, we knew that all along. Well today when we look at these cases, we have 35 states with cases increasing, 13 where they are now level for the last 2 weeks, and only 3 where the case numbers are dropping,
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that's Maryland, Rhode Island, and the District of Columbia. It's a situation that has changed on a dime, and this should not be a surprise and we're going to see more of these happen over the course of the months ahead. Just to give you some sense, today the actual number of cases as reported for yesterday, were 44,734 cases. Again, we always know that we've missed many cases. If you look at the seven day moving average it was 41,551, so about 3000+ cases less than the actual number, which is telling you that the 7 day average is still lagging behind because the case numbers are increasing that quickly. The previous high for cases in this country in the earliest days of the pandemic hitting the U.S., were about 39,116 cases on April 24th, so clearly 5,000 cases less than we saw yesterday, and that's when we thought it was bad, and this is not due to more testing.
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I worry that we somehow have missed the point here. Right now in the world, we are 27th in the world in total tests attained per million population. About 101,500 have been administered per million population. If you look at countries like Denmark 181,000, U.K. 138,000, Russia 134,000, Spain 110,000, all far exceeding the United States in terms of testing. So please do not coming away with what we're talking about today with the idea that we're just looking harder now. When you actually look at where the cases are going up, not only is the testing going up, which it is, but also the percent positive of tests going up, meaning that we're not just out sampling willy-nilly, but that we are in fact really trying to find cases, and we're finding them. So this is an important issue. Now, having said that about cases, deaths is another interesting and more favorable assessment here.
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On June 15, we had 758 deaths reported that day, the 7 day moving average. I took June 15th because we know the lag time in, actually, case reports and death certificates moving forward and actually getting filed and counted, often is two to four weeks after the death occurs. So, we always have a major lag there, that far exceeding that of cases. If you look at the previous largest number of deaths reported in one day, it was on April 11th, when things were at their worst in the New York City metropolitan area, and that day we had 2,203 deaths. So you can we've had, almost a drop here of two-thirds, in terms of number of deaths. I think that can be attributed to two primary issues. One is the population that are now being seen in our hospitals,
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and where the virus has now moved into, and they are lower risk individuals, are younger. States like Florida that have seen the average age of cases going from 65 to 35. Yes, having illness in that category is a much more favorable on average outcome than if it's in those over age 65, but we're still seeing increasing cases of severe disease in these younger populations, and we're seeing deaths, and often associated with such risk factors is obesity, which again is another epidemic that we have going on in this country. So, the different population accounts for

some of this, and better care. We are surely seeing better care, my hats off to the intensive care providers in this country, at reports early on of 70-80% of patients on mechanical ventilation dying, today that number in many units is down to less than 20%.
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Remdesivir surely had some impact, dethamexazone has also had some impact, but I think that it's fair to say that overall it's just general improved care and understanding of how to handle these patients, but that will not persist, as we're going to start seeing more and more individuals in the higher risk categories, who have somewhat cocooned themselves being now exposed to other parts of the population. So, prior to this time, if I was a 67 or 68 year old grandfather I might have cocooned myself and I wasn't in a nursing home where congregate care was a very important part of the outbreak, so I wasn't really at risk. That wasn't how my son, who happens to be 38, or my grandkids, who might be in their teens, whatever, come to see and now they bring the virus because we've moved the virus into that category. So this is going to be a whole series of many mini-epidemics.
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M-A-N-Y M-I-N-I. And the whole point of it is that they're going to continue to change over time, who is most impacted on any one given day or month. We know over the past five weeks, young adult population has really been at the heart of major transmission, much of it occurring at social settings indoors, particularly bars, and that is going to spillover. Now, when we look at where we're going, Tony Fauci today, in a senate hearing stated that we could very easily be looking at 100,000 cases a day if the country fails to contain the surge. I think that's a possibility, I can't say that it's going to be 100,000, but what I can tell you as I have been for the entirety of this pandemic, is that viral gravity works. This virus is going to keep looking for susceptible people, it is going to keep finding them, and we as a population need to understand that what we do to prevent that from happening will, in fact, at least in part, give us some protection,
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and we'll talk more about that in a moment when we get into that area, but the point is this is not a one-time surge in cases. This could come and go, and come and go, and come and go until we have a safe and effective vaccine that we can use, and if we don't have that safe and effective vaccine in a timely way, meaning within the next year, the virus is basically going to keep pursuing those susceptible individuals, and we will get it to herd immunity. Some have said, "well you know, if we have a vaccine today that's not that effective most people won't take it and we won't achieve herd immunity," my response is "no, we will, the virus will just do it through natural infection." So if we look where we're at today, we have the 7 states that over the last 7 days had more than a 25% increase in the total number of cases from the previous 7 days.
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That's Texas, Arizona, Nevada, Georgia, South Carolina, Montana, and California, and I must add, if you look also there are hotspots in the Northwestern spots of the United States, other areas. This is not just attributable to air conditioning, because we've heard, we'll it's so hot, people are indoors, that may contribute to it, but it's a whole series of events that are going on, which we'll talk about more in a moment. So I just want to point out that this should not be a surprise to anyone that this is happening like this, and yet I find that it is a surprise. That people

are somewhat shocked that we may be seeing these kinds of cases. Remember if 50% of the U.S. population gets this virus, we're talking 160 million cases. 160 million. If today we believe only 5-7% of the population has been infected, that's a lot of millions to get to 160, and either we get there through natural disease or we get there through vaccine.
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I know that's hard to hear. It's sobering. But it should be the basis on making sound, practical, and meaningful decisions on what we're going to do. We have to depoliticize this situation. We have to stop having hopeful and wishful thinking, and we have to say, "This is the enemy. This is who it is, and this is what we're going to do about it, and this is how we're going to do it." So I can't state that more clearly, hopefully, for you all, that this is what we really need to look at, where we're going to go. Congregate care and work conditions are going to continue to be an important location for infections. This close bringing together of people in long term care facilities and working areas like meat packing plants, prisons, are all continuing to be a source of ongoing cases and will, as we see overtime, still contribute a substantial number of deaths to this pandemic. Now people are seeing the bar scene.
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Shouldn't be surprised. Particularly in the world of superspreaders, that you know, putting a couple hundred people in a bar one night, when they're supposedly social distancing, but anybody who's ever been to a bar knows that's not what happens. Why should you be surprised if a superspreader is indoors in that environment that you wouldn't see many, many cases? We have one situation here in the state of Minnesota, where two nearby bars, on just two nights of attendance, over one hundred young adults were infected in those two bars recently. That's the kind of dynamics we're going to continue to see. The bars themselves will continue to be an issue when we talk more about mitigation, what we should do, let's come back to that. The other area that I struggle with a lot, and we will cover this in a future podcast, a near future one, because I know many of you are interested in this, in schools.
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Yesterday the American Academy of Pediatrics came out strongly urging that schools be reopen in the fall. The lost educational opportunities and what that does to society, not just here but around the world, is substantial. We get that. Now how do we balance what the issues around safety, not only for the students but also for the teachers who may be older, may have underlying health conditions, how are we going to do that? If we'd had this discussion about schools four weeks ago when people thought, "Huh. We're just about ready to reopen. Cases are coming down. We finally got this under control, we know how to do this." We would have had one school discussion. Well I can tell you that today it's going to be a different discussion, and you know it as well as I. But on the other hand, I'll also say come late August/early September, we're probably going to have another kind of discussion. We'll see where cases are at, what's happening. And so, one of the things I would add here is just that the flexibility we have to have right now is going to be one of our greatest assets.
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Meaning we have to plan as if we're going to go on with life, as if this virus weren't there. That should be our underlying premise that we should go in everyday, but knowing that in fact it is there, we also have to have those plans that say, "You know what? If it's like this or it's like that

or it's like that, this is how we'll respond." We will not be held as some kind of hostage of this virus by what we do. We will have options, and we need to do that, and we'll talk more about that, but that's where I see this epidemiology going. Now, one last thing that I want to say about the international situation. It's teaching us something very important. One is that yes, the United States looks unlike any country virtually in the world right now, in terms of how we have seen this pandemic play out here, but I would also caution you to say that while some countries have done it better with fewer number of cases, with unique geographic features like an island nation with a closed population,
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this is going to be a challenge for the rest of the world. I will refer in a moment to another situation in Europe, the Czech Republic, where they used extremely, extremely comprehensive measures in terms of trying to reduce transmission from March to May, and they literally knocked it down, and then as they started to ease up the last several days, they've had a big increase in cases. You see that in Germany, particularly when the meat packing plant workers became infected and started transmission chains in the community itself. We're seeing it in Korea. In fact, just yesterday one of the senior South Korean public health officials said, "Herd immunity appears to be an elusive hope at this point." Meaning that they were going to have a lot of cases, but it wasn't going to be enough to even get them to herd immunity, and they are very concerned about these continued flare-ups that they see. I could go through the laundry list.
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South Africa, right now, almost 7,000 new cases added today alone, and that includes, now, 128 new deaths today. India, major challenges, Brazil, Yemen, and in fact, Yemen is unfortunately the example of not only the direct impact of COVID-19 on a population, but it's indirect impact. It's been estimated in the last week that millions of children in Yemen will literally be pushed to starvation and death, amid the huge drop in humanitarian aid funding there, because of the issues of both the civil strife as well as COVID-19, and the tally is much, much higher there than we even realize. Australia is beginning to see a surge of cases in Melbourne, where prior to this time, people hailed the work that the Aussies had done to limit transmission, which they did, and they deserve great credit for that, but it's back.
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Same thing is true in New Zealand, a country near and dear to my heart. A year ago right now I was in New Zealand. I love the Kiwis more than I can tell you, and they've been challenged with at least 11 introductions of the virus in the island area just in the past several weeks after they virtually eradicated the virus. Now they still stayed on top of it and have done an amazing job, but it's a constant challenge. So, internationally we're going to see the same things play out around the world that we're seeing play out here, and I think over time, as much as there still will be mitigation strategies, some countries will be able to use, like China, like some of the Asian countries, where they have almost an authoritarian opportunity to put forward control measures. They will likely do a better job, but everyone, everyone is going to be challenged by this virus in the upcoming months.
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CHRIS DALL: In an interview yesterday with the Journal of the American Medical Association, CDC Deputy Director Dr. Anne Schuchat, said that "the coronavirus is spreading too rapidly, and too broadly for the U.S. to bring it under control with testing and contact tracing." Do you agree with that assessment? And if that's the case, are some areas of the country going to have to return to shut downs? And furthermore, what should our game plan be?
DR. OSTERHOLM: Of all the podcasts that I've done over the recent months and for this very question, this is probably the hardest of all the podcasts I've had to prepare for. I owe you answers that if I'm going to pose questions I should have, and I think the question you just asked me is right on the mark, and we are, as I said earlier in this podcast, at an inflection point. What are we going to do? We know that we have, really, two different kinds of environments. One is when case numbers are very low, where we can do a much better job of controlling additional transmission, because of the ability to test and do contact tracing,
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but as we have demonstrated in the United States, that's a real challenge, even when it's in areas of low prevalence of virus activity, and I think that what we're learning here, if nothing else, is that there is no magic bullet. These people that continue to say, "test and trace to reopen the economy safely," that's a slogan. That's just a slogan, and what we really have to do is take a step back and say, "what is it that we really can do?" And I actually agree 100% with Anne Schuchat, one of the best public health minds, I think, in the country, very honest answer, and I think she's right. I think right now this idea of trying to test and contact trace throughout the country in areas that are really taking off has little, little opportunity to really make a difference. One: because of the high incidence of asymptomatic transmission,
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because of the unwillingness of the population to participate in contact tracing, and for that matter, to get tested, all pose huge challenges, and we don't have time to carry out a long-term experiment, and so what we have to do, is come back to the fundamental question that I've been raising for weeks and weeks, and have not provided you with a suitable answer, I'm in the wrong here. I could've and should've done better, I didn't, but I'm trying, and today I will do my best to try. We have seen what can be done in places like Wuhan when you have the authoritarian ability to enact an in home quarantines for weeks and weeks and weeks. Somewhat successful in a more modified way in New York City, in Connecticut, and New Jersey in April, where kind of the lock down of the economy brought that about,
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but we've also learned that unless you do a complete lockdown for a long term this virus will come back. It's a leaky bucket virus, it's going to find a way out of that bucket one way or another and it's coming back, and so we're going to have to understand cases are going to occur unless we have this complete lockdown. We know that would not only destroy our economy, but really in a sense destroy our society. So what do we do? Well, if we do kind of what we're doing now, in a number of these states we've just basically for at least a several week period, and maybe several month period, have really let this virus run willy nilly, and we're now paying the price for that with the kinds of hospitalizations that we're seeing, major increases in hospitalizations, and even while it's in a younger age population, in many of the cases we're still seeing the huge challenges we have in healthcare and what that means,

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and I'm convinced that over the course of the next few weeks to few months, that we're are going to see this spillover from the young adult population to those who have risk factors for serious disease and death, and we will see the number of deaths rising again, not just in the young adults, but also in others who are now infected by that group, and so that's not acceptable, and you know, I've been talking about trying to thread the needle with a rope down the middle, but now is the time we've got to figure this out. We've got to say, "We can't stop all cases, so what are we going to try to accomplish?" And I look at the rapid expansion of cases in young adults right now and I think that's a house on fire. It's going to spillover in ways to those who are at high risk of serious disease or death in a very unacceptable way, so you might say, "Well then try to bring cases in young adults in slower means, would that help?"
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And it surely would. Now people would say that sounds like Sweden, which I surely don't mean it to be since what happened there, particularly because of how it hit long term care, but we haven't had a discussion, how to bubble, how to best protect those at high risk. Now, I could make the argument today that we should shut down bars around this country, at least for the months ahead, and I could tell you right now that the hospitality and beverage industry would hate that, and I understand why, but then what can we do to support that industry, tax-based support to say, if you take a hit here to keep young adults from being together in a way that we're seeing right now with these bars, somehow financially, the federal government at least will help take care of you, and some will say that is so naive, that is so socialist, however, we need creative thinking right now, so don't throw anything out.
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Let's think about everything. The next thing you'll say is, "well they'll go somewhere else if they don't go to bars," well we need to do a much more extensive effort in terms of educating them of the implications. You know, I am certain, and I say this with pain, that there were young adults who went home for Father's Day, and took the virus with them to see their fathers, their grandfathers, their mothers, and their grandmothers, and only in the next few days will we see the extent to which that happened, where there was such an overlay of increasing cases in this young age population, and all you have to do is be one young man, who is so proud to go home and see his father, who loves his father dearly, now responsible for taking a virus home and infecting him. So, we've got to educate, how it is we can slow down this transmission. What populations can contribute to that? So now we're at a point where we have to figure out: what is our goal?
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Are we going to try to suppress cases, hold them down, to a great extent, until a vaccine arrives? Are we basically going to say, "Well, some cases can occur, you know we don't want it too much, we don't want our hospitals overrun until a vaccine arrives"? Are we just gonna say, "you know, we'll just do what we do, and hope the vaccine arrives sooner than later, but we're not going to do much different, and let's move forward"? Now, I think that discussion by itself has to be had in every community in this country. What are we trying to do? Don't sell the game anymore that we can prevent all these cases. We can't. This is a leaky bucket virus. I would urge that we take a look at schools. I don't think that schools, and the evidence that we have

right now, that they will lead to substantial transmission in our communities, at least from these kids, with what data we have. So we make a decision.
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How much will they contribute to cases in our community, both in that group, and also among the adults who work there, their families, etc, and what are we willing to accept? If we use only a numerator situation, meaning 1 case is 1 too many, and as a grandparent I can tell you I get that completely, that's a challenge, but are we going to shut down schools based on that, or are we going to say there are some acceptable cases we will, as a society, have to actually deal with. The same thing is true with our workforce in general. What is it that we're willing to accept? It's not all or none, and we need to have that discussion. So, to me, this is where we're at right now, and the next 2-3 weeks are going to be very critical, because I think in order to bring case numbers down, we're going to have to do lockdowns again, and somehow we have to avoid those, we have to find that middle ground of what we contain.
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I've already offered up bars as just one place to start, with the idea that they're financially compensated for their down time as a public health measure. I could sit here and go through additional things I think that would actually be very helpful, that way. We have to understand, are we really putting in place true quarantines, when one state says to another, "you're going to have to be quarantined for 14 days before you can come here," come on. With all due respect, I appreciate that, but that's not going to happen. Who's going to disclose that? How is that going to be handled? This is a critical time for critical thinkers to bring critical solutions to the table. We need those, and we cannot accept the fact that there will be no cases, we cannot accept the fact that cases can go willy nilly. I propose that we start with issues like the bars, and I understand the hardship that would be, but we need to financially compensate them. I look at the issue of the schools. What can we and should we do about reopening schools, higher education?
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What do we do in venues with large numbers of people, in theaters, and so forth. It's just a matter of time before we're going to see more outbreaks associated with a theater, it's going to happen, and then how many theaters do we have to have before we decide that's unacceptable, or indoor concerts, or indoor rallies, or whatever they are, and now is the time for us to actually have that discussion and say, "we're not going to prevent all of them, nor necessarily should we, but at the same time, what is it that we can live with to get us to a vaccine?" And so I hope that this podcast spurs that on, and if people feel like I've left you hanging, I'm sorry. I'm struggling with this. I'm trying to find the ways that bring us together to have this kind of discussion, and just to talk about that is the first thing. In some ways it's kind of like the stages of death and dying, where basically you're in denial initially. We're in denial of what this virus is going to do, and we've got to not be there anymore,
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or we won't, in the end, actually accomplish anything before a vaccine arrives, and let me just say one last thing. You know, I'm sitting here in Minneapolis-St. Paul area, watching fellow healthcare workers, reusing N95 respirators 5 days in a row, the same one, because we don't have enough personal protective equipment here. This is just absolutely, completely wrong. Wrong, wrong, and wrong. The single most heroic people in this entire effort are being asked to

go to work everyday to take care of us, for those who, by the way, may put themselves in harms way by their behavior then expect to have a system take care of them, and we have to have a renewed effort in trying to bring the kinds of personal protective equipment to these workers. My heart just goes out to them, and as many of you know on this podcast, my daughter is one of them, and so I just urge,
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as we see this surge of cases, that we don't get bogged back down into who's in control of what part of the personal protective equipment supply chain, etc. but we come up with a comprehensive, innovative way to try to respond to this, and whatever we have to invoke to get it done, get it done, and to all you healthcare workers who might be listening to this, I just thank you. Thank you for what you do for us everyday.
CHRIS DALL: Mike, you've talked in recent episodes about infectious dose, and what we need to learn about length of exposure to SARS-CoV-2, and how it relates to infection. As you think about this issue, have your views about the associated risks of certain activities changed at all?
DR. OSTERHOLM: Yes, I'm growing, with time believe it or not. Many of you on this podcast heard me say this in the past.
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As I get older I get more vulnerable to learning, and I think that I probably spend about 90% of my time learning today, 7% of the time making mistakes, and 3% of the time trying to clean it all up and apply what I've learned into every day life. I have changed my thinking here, and what I mean by that is that again, trying to come back to the discussion we just had about what is doable and practical, and not some, you know, ideal or something where we just give up. There has got to be an in between ground, and so I look at this issue of infectious dose, and I'm very happy to report that we are so fortunate at CIDRAP to be convening this group of 20 international experts in the areas of aerobiology, industrial hygiene, infection control, respiratory protection, infectious dose, and animal challenge studies, to actually come up with, what are the likely risks that we see based on what the infectious dose of the virus in the air might be, or on a surface,
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and how long do you have to be exposed to that, under what conditions, what kind of respiratory protection do you need? And we've had Zoom calls with this group. They're from around the world. We're working diligently right now to come up with this information and provide it back to the world, and return to say, "This will help you from a guidelines standpoint to know, you know, what is the risk?" So for example, there are many people who have this sense that if somebody with the virus just comes near me it's like a game of tag. Now I'm it. That's not the case at all. The exposure situation is a function of the amount of virus, for example in the air, how much I'm breathing in a given minute, and what that over time does in terms of what is the necessary infectious dose for me to become infected. It's not one virus in your lungs and you're done, and so hopefully from that standpoint, I'm more confident that we can give people more practical information.
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If you go to the grocery store, and you're there 10 minutes, 15 minutes, 20 minutes, even if there's somebody in the store, etc., etc., what is your likely risk if you have on a surgical mask,

or you have on a cloth face covering? What does that do, or if you have nothing on? And so we're working hard with that, and I can't say how much I appreciate the efforts of this international group. We're all volunteering their time. They are so brilliant. Sometimes I sit there and listen to them and I feel like I should be paying tuition to even be part of the meeting. It's remarkable, but let me also say that, I came to grips with this issue in a very personal way, using the best science I could, with Father's day. Thank you to all of you who have sent emails to me, supporting me in the fact that I was missing my grandchildren immensely, and when you have younger grandchildren, particularly under age 5, that don't quite get that distancing thing, that's a challenge. So I did see them on Father's Day. I was in an outdoor environment which as we know, surely helps a lot in terms of limiting the exposure, and I did give every one of them a hug, and you know, for 30 seconds to a minute, it was the most beautiful hug I think I've ever had, and I assessed my risk based on the time period I was by them, in the outdoor air, and the fact that they had no known exposure, for the period of at least a week, or two weeks before, that would've put me at increased risk, or for that matter, me to them, and I felt comfortable in that setting saying this was a risk assessment of time of exposure, amount of exposure, and what that meant, and so I think we have to find practical ways to do that. I would tell everyone listening to this podcast, you know, I surely don't want to put you in harms way, this is my own personal advice, you can take it for what it's worth, but if you wanted to give your grandchild a hug, and they hadn't had any known risk exposures in the previous 7-10 days,
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and you were outdoors, and you had the most wonderful hug of your life, go for it, and we need to figure out more things like that. On the other hand, if you're going to go sit in a bar for the next four hours, three hours, with some good friends, drinking with tables close together, and people all around, don't do it. Don't do it. That I think is how we're beginning to separate this out. So one of the things I will try to do, as I live my own life and put my own risk perspectives, and God knows, you know, you can say I might do something about what may impact me, but I would do nothing, nothing to hurt those grandkids. So when I made that decision, I literally made it thinking first and foremost about my grandkids, my kids, and so I feel comfortable and confident that was a safe thing to do. I'm a week out, I'm feeling really good, they're feeling really good, they just want to know when they can see their grandpa again, which is actually beautiful news. There's nothing better than your grandkids saying, "Grandpa, when can we see you again?"
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So I would say right now, I will come back, as I can, with suggestions about how you might, you know, take this virus on. Cheat it. Basically get something in that doesn't put you at increased risk. As we get more data on the actual infectious dose material, how can we do things that will actually give us a higher quality of life? You know, you've heard me say over and over again, do not ever social distance--physical distance. Physical distance. No social distance in our world, and I'll try to do the best I can to help with that, and so I guess, Chris, you could say personally and professionally I've moved a bit on that whole issue of exposure and infectious dose.
CHRIS DALL: So, switching gears to another infectious disease, scientists in China reported on a strain of Swine Flu spreading in workers on Chinese pig farms. Mike, what can you tell us about that study, and how concerned were you about those findings?
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DR. OSTERHOLM: Any time a flu virus does what this particular virus is doing, it makes me concerned, and I have to say, there is an element of irony to all of this, because I have been aware this situation was possibly happening in China, but a week ago CIDRAP, which is supporting a major initiative to look at the influenza vaccine roadmap for the future with WHO and Wellcome Trust, and we're working hard on trying to bring together a universal vaccine, and we were supposed to have a meeting, actually in Geneva last week, and of course that got cancelled, and we had an incredible group of world renowned experts in the influenza world who are working with us on this, including people at the WHO and Wellcome Trust, and one of the issues we raised this past week when we had a Zoom meeting with all this same people who for two days, we're incredibly engaged participants,
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was what would we do if we had a coronavirus pandemic and an influenza pandemic at about the same time, overlapping each other? And it turns out many of the people who worked in influenza have been brought into the coronavirus world, so we actually had some real dual-expertise there, and I must say, there was a great pause, and everyone just kind of shook their head like that can't happen, but then again of course we realized that the coronavirus pandemic could never happen either, and so to see this paper show up this week as it did in the Proceedings of the National Academy of Science was again, another sobering moment a week later. This is actually an H1N1 strain that's circulating in swine, and it has been for several years, but it appears now there has been more transmission from swine to people, about 10.4% of the workers they tested at a variety of farms where this virus is in the pigs had antibody or evidence of having been infected,
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and among younger age population it was over 20% had previous evidence of this. Now, the fact that we didn't see ongoing transmission, or at least any evidence of it, or clinical disease that would suggest that this is been a problem in the areas where these swine farms are at, this particular H1N1 offers a lot of similarities to what we saw in 2009, where we already had a preexisting H1N1 that was circulating, it was in our vaccines, etc. and then all of the sudden a new one showed up, in the spring of 2009 coming out of pig farms in Mexico. While overall it had a limited impact, as an influenza pandemic goes, it surely did have a big impact in terms of deaths in younger individuals, because the years of potential life lost under 65, meaning, if you died at 20 that was 45 years of life lost,
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was actually right up there with the 1957 and 1968 pandemics, it was severe. So now we're watching this one which, in retrospect, could have been the 2009 one unfolding and we just missed it, didn't see it. So we're following this closely and carefully, this needs to be on the radar screen. Heaven forbid we should have both pandemics at the same time, that would be unthinkable, but then unfortunately our job is to make the unthinkable from actually happening. So, you know, vaccine work will continue, we'll continue to track this, and what would make this become a pandemic strain is if the infections continue to come to humans, there's a continued change genetically in the virus, in fact that people then actually get infected with viruses that now can not only infect them but they than can transmit to other humans. Once that happens,

that bridge has been crossed, and then we surely, we would not have protection against this virus, it's dissimilar enough from the other H1N1 we had before,
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and this one we have now, that it's very likely that this could cause a very serious pandemic, particularly where we see such a proportion of younger individuals who have been infected. So we'll follow it, you know, we don't get to call the pitches, we just get to call when a ball's a strike, and we don't know what's going to get thrown at us here, but you know, we've get to be ready. You know, at CIDRAP, we're doing what we can to stay on top of this, and in the off chance that this should become a problem, we're prepared to do what we can to help the world get through this one too.
CHRIS DALL: As you well know, Mike, the issue of masks and face coverings continues to be politically divisive in this country, but just looking at the science, are we learning anything new about respiratory protection against SARS-CoV-2?
DR. OSTERHOLM: I think our group looking at infectious dose is learning a lot, and as I said, I'm really excited by the work, you know, the cards will fall where they may,
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and we'll come out with what we find to be the best information that we know about infectious dose and what we can do to prevent it. I think what's been challenging and continues to be is the politicization of this, and I realize today there are a lot of reasons why things are politicized as they are, and you know, we have worked very hard to stay clear of that. Our job is a scientist, you know, I'm not a politician. I'm a scientist. I do comment on what has public policy implications, because that's how public health works. It's action. It's taking science and putting it into action, but I worry that we've missed the bigger point of what's going on right now with the science of respiratory protection, and right now I can't tell you, and it's not just on masks alone, but I can't tell you how bad the medical literature has gotten. You know, when we're all done with this,
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I hope that there's a number of medical editors that are fired from their jobs, because I can tell you, the amount of junk, plain science junk that's coming out right now, is a real challenge, and you know, I will say that there is incredible work coming out, some amazing quality work, so I surely don't want to cast that as the majority. It's not. The vast majority of work is, in fact, incredibly important work, but you know, another paper came out this week from a journal called Health Affairs. It was from two research associates at the School of Public Health and the University of Iowa in Iowa City, and the title of it is "Community use of face masks and COVID-19: evidence from a natural experiment of state mandates in the U.S." and what the did is they took the date upon in which a mandate was made, or recommendation to use a mask in the community, and they looked to see when cases started to drop. Well, in every instance, if a community had a mandate around masking,
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they had a lot of other things that went into place at the same time, and to afford all of this change due to just masking alone, is again, akin to that example I gave before of me putting a sign in my front lawn saying, "no elephants allowed," and then having a 3 year period where not one elephant showed up in my lawn in Minneapolis. Look what I did! And so I worry that we're

not doing nearly enough to do the kind of adequate peer review that we need to do and to make sure that the science we're putting out right now is solid science, and so that one continues. I also worry that we're seeing more and more examples of scientists not using what I would call best science, but becoming advocates, not science based, and, you know, we're all likely guilty of that sometime. I'm sure I am. I try very hard to stick to the data. I try to say what I know and don't know,
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but you know, I just saw a situation where two people that I respect very much and appreciate their science acumen, they've contributed a great deal over the years, but this past week they did an interview on radio, and when they were asked to address the issue of masks, they basically said that in fact, you know, if a large percentage of the population, a study showed 60% wear masks, and they are 60% effective, that alone can reduce transmission rate below 1, so you would see a shrinking epidemic. Well, again lets come back to the concept of R0, or that idea that if you get below 1, meaning that for every person infected they infect less than 1 person, and then eventually the outbreak, the epidemic, the pandemic dies out. Well, let's just imagine this were a vaccine. 60% of the population does it, gets vaccinated. The vaccine is 60% effective, that's what they claimed here,
and again there's no one that's shown any data for these masks that suggests that might be the level,
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and that would actually come out at 36% reduction in cases. 60% times 60%. Well, 36% reduction in cases is far below the 50-70% that we would need to get to R0, and I know that this person knows that. Why advocate that that's the case? Now I can still make the case you should use cloth face coverings that will help reduce the risk. You know, I used this example in the past, with influenza vaccine. I'm one of the ones that helped figure out that influenza vaccines weren't nearly as effective as we thought, but even if I can get a 35-40% protection from it, I'm going to take it every year. I would still say use a cloth face covering, but don't sell it as somehow we're going to have this magical bullet that will bring the pandemic to an end. Then the second person on this same show, went on and basically commented on what is happening in the Czech Republic, and this individual basically said,
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you know, the Czech Republic basically was in fact responsible for bringing the disease under control there, and in fact, it was all about using masks. In fact, at this point the interviewer asked this individual, and the interviewer says, "Yeah. I think if we told people that they would do exactly what blank said, it was a simple 99 cent something over their face, they would need to do it for a short period of time, it's the greatest bargain of all time." And I quote, "You know, the Czech Republic put on masks early. They had reported 80% mask use and now they don't even need to wear masks anymore, and the reason is the virus has nowhere to go. The virus is looking for new people to infect, but it can't get in your mouth, eyes, nose, it just slowly dies. Well the bottom line is, the group in the Czech Republic, beginning in March, put in the most comprehensive program to reduce the risk of this virus.
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They closed borders, they did widespread testing, they had major quarantine issues, they did contact tracing, they did all kinds of things, as well as mandate cloth face coverings. So that is true, but what's happened over the course of the past month, they've relaxed a number of these varied mandated efforts, with the exception of cloth face fittings. They actually still are on, supposed to be on, until you get to July 1st. Well it so happens over the course of the last two weeks, Czech Republic's had a major upturn in cases, and over the weekend they had a major challenge with cases, and they're all still wearing cloth face fittings, but what they're not doing is the distancing, etc. they had done before. Now that again doesn't mean you shouldn't wear a cloth face fitting, it may be doing something to help reduce transmission, but to characterize that that country proved that in fact,
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using a cloth face fitting was the reason why the cases disappeared and they've stayed disappeared, is just not simply true, and so, you know, we can't have an intelligent data driven discussion about what are the cumulative things we can do to reduce the risk, because it's either you're for it or you're against it. You know, I get hit with that all the time because I'm sitting here saying, "I want the data to share with people." In the mean time, wear it. Wear it. Don't fight over it. Wear it, but at the same time, I owe you, we all in public health owe public the information. How well do these things work? And so that's the challenge I've seen recently with this issue, is where we've gone beyond advocacy based on science. We've gone to a point of advocacy based on a sense of ideology, and it goes both ways. Both for and against wearing these cloth face fittings. If I had to do anything, if I were the teacher in the room, I'd sit there and say,
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"Put them on now. Be quiet, do it, and we're going to get to you, but remember when you put them on, still the 3 most important words in your life are distance, distance, and distance." And then I think, that's what we can do right now, and to do anything short of that, we are not carrying out the duties we've been given as public health professionals to do the most good for the most people using the best data we have, and so I worry about this kind of war on cloth face fittings, but I'm excited by the fact that I'm part of this group that is working so diligently to give us the information and we'll have it soon, so then let everybody see. Okay, this is what it does, and if it helps 10%, 20%, I'll go with anything that helps that doesn't cause us harm. The final piece I would say, over the course of the last month, we've been watching television news, and not for the purpose you might think.
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We freeze frame shots of public gatherings and we look at the number of people wearing cloth face filters or surgical masks, and more importantly, it's not just who's wearing it and who's not, which is important, but we're looking at how they're wearing it. 26% of everybody we see, and it's been consistent and it's been across different populations, 26% wear it under their nose. I mean, that's like kind of fixing, you know, 3 of the 5 screen doors in your submarine. You know, clearly coughing out of the mouth is going to be more important in terms of droplets, but again you shouldn't be out, if in fact you're coughing, but to not put it over your nose is a challenge. Why are we not educating people about how to use these? If a fourth of somebody is not doing it right, then that says we're doing a really bad job of educating the public. So if you're wearing

these things, and I think you should wear them, do it right. Put it over your entire face, as tight face fitting as you can.
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CHRIS DALL: The email question we've selected today relates directly to the issues we've been discussing on the podcast today. What's doable, how people should think about risk of exposure, and how people can safely live with the coronavirus. Joe writes, "I'm being pressured by friends to go out and hang out with them. They're saying that they're keeping small groups of people in their circles and that they're wearing masks. Am I being paranoid by not wanting to go out and socialize at this time? I'm 33 and in good health. Is there really a safe number of people I can be around, and if so, what is that number? I'm mostly distancing as it is, except to go get groceries and important items."
DR. OSTERHOLM: Well I have to say, first of all, thank you very much for this very thoughtful question. You clearly to appear to be much wiser than your years on this earth would give you credit for. You know, how you're approaching this, the way you're thinking about it, what you're doing, is all based on very rational thinking and tough thinking.
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This is a challenge. This is part of that risk issue that I just talked about where I'm willing to go and in an outdoor environment, give my kids a 30 second to 1 minute hug, and then remove myself but in close distance to them. In the setting you're portraying here, this is a challenge. I think you do put yourself at risk, and God knows what's happening with so many young adults in this country right now where we see cases exploding. So I would say to you at this point, if you want to stay uninfected, and particularly if you're having contact with people who might be high risk in your family or anywhere else, then doing what you're doing right now is the right thing. You're not overreacting and you're surely not dismissing a reasonable and rational concern. So, I wish I had a better answer to say that, "yeah, just go out on the town and go do it and get it over with, okay,"
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I would hate for you to be that one person who's 33 years of age that ends up in the intensive care unit and dies. We have had patients like that right here in Minneapolis, who have that's happened with. So, for the time being, this is not a lifelong experience, trust me. Hopefully you know, we'll get the vaccine, you can do your quote unquote "developing immunity" with that, and in the meantime, if it were me, I would be doing exactly what you're doing, and I'd be thinking about it the same way. Find how many other ways you can be socially engaged, and how you can join people, even if it's outdoors, at a picnic, where you really do enforce people staying apart. Things that are creative where you're distancing yourself enough and you're in the outdoor air. That, to me, is the way you need to think about it. You don't want to spend the night in a closed bar with lots of people around you, and drinking like that. I think that's a real challenge.
CHRIS DALL: So, Mike, what's the message you'd like to leave our listeners with today?
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MIKE OSTERHOLM: Well, again, kindness, kindness, kindness. Acts of kindness. Be kind. More than ever. Our country seems to need kindness more every week, and so, as I said last week, the more kindness you give, the more you'll have. The other thing I just wanted to share

with you since also, what I think it means to be a good citizen in a time of a pandemic. They may think that's odd to say, but let me share with you an experience. Some of you have read my book, know that I was the oldest of 6 kids that had to manage my father's alcoholism and physical abuse and it was a challenge, and left me with lifelong lessons that I've never forgotten, but one of the most special gifts of my childhood was the relationship that I had with the wife of the owner of the Iowa newspaper my father was a photographer.
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When I was born she was in her mid 40s, and she had one daughter, and then you might say she had me. I became her adopted son, and in turn she kind of became the mother of my soul. As I've said, my family well knows her spiritual DNA is still in every cell of my body and it surely helped shape the values I cherish today. She was the essence of a renaissance woman, having a degree in journalism from the University of Nebraska, and was fluent in French, traveled around the world, and over the course of the 20+ years I was really close to her, she died when I was 27, we shared hundreds and hundreds of hours in soul searching conversations, and she wrote me hundreds of letters and notes that would appear in the mail even though her house was just 8 blocks away. As some of you know, she also got me hooked on The Annals of Medicine Articles that appeared in The New Yorker magazine which she subscribed to. These articles were the incentive to get me to go into public health in this area. So anyway, several years ago I was asked to give a commencement address at a medical school,
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and I'd never talked about this relationship in public before after all these years, but I decided I owed these graduates more than just a warmed over commencement address, so I shared some of the lessons learned from a woman named Nana, and one in particular that she shared with me that at the time I had no idea how relevant this might become, was about the issue of credit and compliment, and putting that into perspective in terms of a pandemic of all things. She shared with me a passage from Albert Camus fictional depiction of a plague outbreak in Oran, Algeria in the 1940s. Some of you are aware of this book, I urge you to read it if you haven't, it's a remarkable book, and Nana wrote to me once, and these are her words, "Never expect and more importantly never demand credit for what you should do. I worry today that far too many people seek great compliment and reward for being a good citizen.
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In doing that we minimize who we are. Camus, in his spellbinding book "The Plague," captures the essence of what I mean as he describes the work of the sanitary workers who's job it is to go into the city and retrieve the bodies of those who have died, in real peril to their own safety. He writes from the eyes from the story narrator. However, it is not that narrator's intention to ascribe to these sanitary groups more importance than they're due. Doubtless today, many of our fellow citizens are apt to yield to temptation of exaggerating the services they render, but the narrator is inclined to think that by attributing over importance to praise-worthy actions, one may, by implication be paying indirect but potent homage to the worst side of human nature. For this attitude implies that such actions shine out as rare exceptions, with callousness and apathy as a general rule. The narrator does not share that view. Those enrolled in the sanitary squads, as they were called, had indeed no such great merit in doing as they did, since they knew it was

the only thing to do, and the unthinkable thing would have not to have brought themselves to do it.
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These groups enabled their town folks to come to grips with the disease and convince them that now the plague was among us. It was up to them to do whatever they could to fight it. Since plague became, in this way, some man's duty, revealed itself as what it really was, that is: a concern of all." I leave you today with whoever's listening to this, thank you again for spending time with us, thank you for tolerating me (laughs), our message, and just know we are all in this journey together as a concern for all, and if I leave you with any last message that's the kindness, that's the glue that holds the concern for all together, and Camus is exactly right about what we need to do here. We should take no great credit for doing what we should do and must do. We must get through this and we will. Thank you.
1:05:00
CHRIS DALL: Thanks for listening to this week's episode of the Osterholm Update. If you're enjoying the podcast, please subscribe, rate, and review, and be sure to keep up with the latest COVID-19 news by visiting our website: cidrap.umn.edu. The Osterholm Update is produced by Maya Peters, Cory Anderson, and Angela Ulrich.